REMARKS

Claims 29-50 are currently pending in this application. Claims 1-28 were previously canceled in response to a Restriction Requirement. Claims 29, 31, 34-39, 42-45, and 47 have been amended. Claims 30 and 46 have been canceled. Claims 49 and 50 have been added. The status of the application in light of the Office Action mailed October 18, 2005, is as follows:

(A) Claims 29-33, 35-39, 41-43, 45, and 46 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,848,389 ("Gapp").

(B) Claims 34, 44, and 47 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gapp.

(C) Claims 40 and 48 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gapp in view of U.S. Patent No. 4,556,591 ("Bannink").

As a prelimenary matter, the undersigned would like to thank the Examiner for participating in a telephonic Examiner interview on January 10, 2006. During the telephone interview, the Examiner and the undersigned discussed the pending claims and the applied references. Although no agreement was reached during the interview, the Examiner provided valuable insight into the material contained in the above referenced Office Action.

A. Response to Rejections in View of Gapp

Claim 29 was rejected under 35 U.S.C. § 102(b) as being anticipated by Gapp. As described below, the rejection of claim 29 should be withdrawn because Gapp does not disclose or suggest all of the features of this claim.

(1) Claim 32 is directed to a system that, *inter alia*, includes a composite material joined to a metallic material.

Amended claim 29 is directed toward a system of joined structures that includes a first structure that can have a first aperture in a composite material. The first aperture can have a first interior surface and a first minimum radial extent. The composite material can be configured so that a small radial force to the first internal surface will damage the composite material. The system can further include a second structure that can have a second aperture in a metallic material. The second aperture can have a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent. The system can still further include a coupling device that can have a first shank section extending through the first aperture and a second shank section extending through the second aperture, but not extending into the first aperture. The first shank section of the coupling device can have at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device. A portion of the second shank section can have a greater radial extent than the first shank section. The portion of the second shank section can apply a first radial force to the second interior surface and the first shank section can apply no radial force to the first interior surface or the first shank section can apply a second radial force to the first interior surface. The second radial force can be less than the first radial force. The composite material proximate to the first aperture can be undamaged.

(2) Gapp discloses a bimetal rivet with expansion characteristics that insures a hole in a first plate and a hole in a second plate are both completely filled when the bimetal rivet is upset.

Gapp discloses a bimetal rivet that has head or shank with a high strength metal and a tail or head froming end made of a ductile metallic material (col. 1, lines 28-32). Additionally, the geometry at the point where the two different materials are joined facilitates the formation of the rivet head (col. 1, lines 51-57). The bimetallic rivet in Gapp allows two plates to be joined together so that a hole in the first plate and a hole in the

second plate are both completely filled, providing a satisfactory rivet bearing configuration (col. 2, lines 27-41; col. 3, line 43-col. 4, line 15).

(3) Gapp fails to disclose all the features of claim 29.

Gapp fails to teach or suggest, *inter alia*, a system having a first structure with a first aperture in a composite material wherein the first aperture has a first interior surface and a first minimum radial extent, and a second structure with a second aperture in a metallic material wherein the second aperture has a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent. In the above referenced Office Action, the Examiner states that Gapp fails to disclose a system wherein the first structure includes a composite material. The Examiner goes on to suggests that it would have been obvious to modify the system disclosed in Gapp to have a first structure that includes a composite material because composite materials are commercially available and well-known in the art. This assertion is incorrect because, as discussed in the Background section of the present application, a composite material is unsuitable for use as the first plate in Gapp because of the potential of damage to the composite material and/or delamination of the composite material.

As discussed in the Background section of the present application, current methods of joining a composite material to a metallic material include bolting the materials together or drilling an oversize hole in the composite material and joining the two structures with a rivet. More particularly, when riveting a composite material to a metallic material, a larger hole is drilled in the composite material than is drilled in the metallic material so that when a rivet is inserted and upset, the rivet does not contact the sides of the hole in the composite material, thereby damaging the composite material. In Gapp, the objective of the invention is to rivet two plates together so that the hole in the first plate and the hole in the second plate are both completely filled to provide a satisfactory rivet bearing configuration. Accordingly, the Gapp system is not intended for use with composite materials. This is further supported by the fact that all of Gapp's Figures (including Figure 1) show two plates being joined where both plates have the same size hole for receiving

the shank of the rivet - a configuration that is unsuitable for use with Gapp's bimetallic rivets.

Additionally, Gapp is silent on (1) a composite material configured so that a small radial force to the first internal surface will damage the composite material; (2) a system where a portion of a second shank section applies a first radial force to a second interior surface and where a first shank section applies no radial force to a first interior surface or the first shank section applies a second radial force to the first interior surface, the second radial force being less than the first radial force; and (3) a system where the composite material proximate to the first aperture is undamaged as recited in claim 29. Even the discussion of Gapp's Figure 1, which the Examiner relies on heavily in rejecting claim 29, is silent on these features. Gapp's Figure 1 is a schematic illustration of two plates improperly joined by a rivet (col. 2, lines 21-33). Figure 1 illustrates previous construction attempts for heat treating a tail of a rivet to render it more ductile (col. 2, lines 21-33). As shown in Figure 1, the upsetting action of the shank "was not uniform and the rivet did not completely fill the rivet hole at the upper section 9" (col. 2, lines 21-33). Gapp goes on to say that the rivet shank should completely fill the rivet hole as shown in Figure 2 (col. 2, lines 21-33). Figure 2 (and all subsequent Figures showing upset rivets in Gapp) illustrate the both the hole in the first plate and the hole in the second plate completely filled. Accordingly, if the rivet in Figure 1 should have completely filled the hole as shown in Figure 2, the plates in Figure 1 must include two metallic plates and cannot include a composite plate.

Accordingly, Gapp fails to disclose, *inter alia*, a first aperture in a composite material wherein the first aperture has a first interior surface and a first minimum radial extent, and a second aperture in a metallic material wherein the second aperture has a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent; and wherein the portion of the second shank section applies a first radial force to the second interior surface and the first shank section applies no radial force to the first interior surface or the first shank section applies a second radial force to the first

interior surface where the second radial force is less than the first radial force; and wherein the composite material proximate to the first aperture is undamaged. For at least these reasons claim 29 is patentable over Gapp.

Claims 31-41 depend from claim 29 and, for at least this reason and for the additional features of these claims, claims 31-41 are also patentable over Gapp. Amended independent claims 42, 45, and 47 contain features generally similar to those of claim 29 and, for at least this reason and for the additional features of these claims, claims 42, 45, and 47 are also patentable over Gapp. Claims 43-44, claim 49, and claims 48 and 50 depend from claims 42, 45, and 47, respectively. For at least this reason and for the additional features of these claims, claims 43-44, claim 49, and claims 48 and 50 are also patentable over Gapp.

(4) Claims 34, 44, 49, and 50 are patentable over Gapp for at least the additional reason that they include that the composite material being carbon fiber and the metallic material being aluminum.

Gapp does not teach or suggest the composite material being carbon fiber and the metallic material being aluminum, as recited in claims 34, 44, 49, and 50. As discussed above, Gapp does not teach or suggest a composite material as the first plate. In fact, the configuration of the plates in Gapp is not suitable for a first plate that includes a composite material. Additionally, the undersigned found nothing in Gapp to teach or suggest that the first plate in Gapp is a carbon fiber material and the second plate in Gapp is aluminum. Accordingly, Gapp does not teach or suggest the composite material being carbon fiber and the metallic material being aluminum. Therefore, for at least this additional reason, claims 34, 44, 49, and 50 are in condition for allowance.

In view of the foregoing, the pending claims comply with 35 U.S.C. § 112 and are patentable over the applied art. The applicant accordingly requests reconsideration of the application and a Notice of Allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-6477.

No fees are believed due with this communication. However, the Commissioner is hereby authorized and requested to charge any deficiency in fees herein to Deposit Account No. 50-0665.

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Respectfully submitted,

By _____

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